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A mollusc-coral interaction in a paving slab, Leiden, the Netherlands

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Abstract

In a slab of imported Upper Palaeozoic (Carboniferous, probably Mississippian) limestone, fronting a house in Leiden, the Netherlands, a spiral mollusc is encrusted by a tabulate coral. The mollusc is most likely a gastropod similar to *Straparollus* de Montfort and the encrusting colony is *Syringopora* sp. This is an unusual occurrence for Dutch street limestones, although similar associations are known from the Mississippian. *Syringopora* colonies typically attach to firm or hard substrates.

Key words: urban geology, Mississippian, preservation, Tabulata

Introduction

The Netherlands is a country lacking natural rock exposures except in the south-east and east. Rather, most of the country is mantled by a thick sequence of unconsolidated Holocene and Pleistocene deposits of glacial, fluvial and aeolian origin (Information and Documentation Centre for the Geography of the Netherlands, 1985, pp. 6–7). But rocks are common features of the Dutch environment, having been imported for use as coastal defence structures, building stones, street furniture and street art (see, for example, Donovan, 2015a, b).

Upper Palaeozoic limestones are locally common and cites fossiliferous in the streets of Dutch (van Roekel, 2007). The enclosed fossils are of limited diversity apart from some rarities. The example described herein was discovered on a 'fossil hunt' through the streets of Leiden with life sciences students from the University. The molluscan substrate is a rarity in itself, but its association with an encrusting coral is unique in the experience of the author.

Locality

The specimen (Fig. 1) is in a large slab of imported Upper Palaeozoic limestones (presumed Mississippian; see below) in front of Rapenburg 22 ('Bibliotheek plus Centrum voor kunst en cultuur'), Leiden, the Netherlands, in the relatively narrow area between the terraced house and the public pavement. This is close to the Rijksmuseum van Oudheden (= Dutch National Museum of Antiquities).

Similar slabs in front of houses are a common feature of this street, and elsewhere in Leiden and other Dutch cities. In the absence of natural rock exposures, such limestones are a common feature of street furniture, such as curb-stones in parts of Amsterdam (van Roekel, 2007), and false rock 'outcrops' (Donovan, 2014a, b).

Description

The limestone fronting houses in the Rapenburg is commonly pale grey (dark grey when wet), with an abundant fauna dominated by crinoid ossicles, productid and spiriferid brachiopods, and solitary rugose and colonial tabulate corals. This assemblage is obviously Late Palaeozoic and most probably Mississippian (Early Carboniferous). As rocks of this age do not crop out in the Netherlands, these slabs are imported, most probably from Belgium (southern Ardennes, Dinant area).

The specimen is unusual in a number of features (Fig. 1). The centre of the figure is a large, coiled mollusc, either planar-coiled or nearly so. It may be a goniatite and radial structures are apparent that may be septa, but these are straight, not zigzag as would be expected (see, for example, Clarkson, 1998, fig. 8.24); they may instead be a pattern of radial cracks produced by deformation. If so, the specimen is not a cephalopod, unless the sutures have somehow been lost during diagenesis. Rather, it is more probably a gastropod such as *Straparollus* de Montfort (Anonymous, 1969, pl. 56, fig. 8). Whichever is correct, mollusc shells of this form and size are rare in these rocks.

The shell is closely associated with hollow white tubes, showing some indication of branching, particularly in the centre,

and left and upper sides of the mollusc. These tubes show no obvious internal structures such as septa or dissepiments. This is interpreted as a colonial organism, probably a tabulate coral such as *Syringopora* Goldfuss (Mitchell, 2003, p. 6).

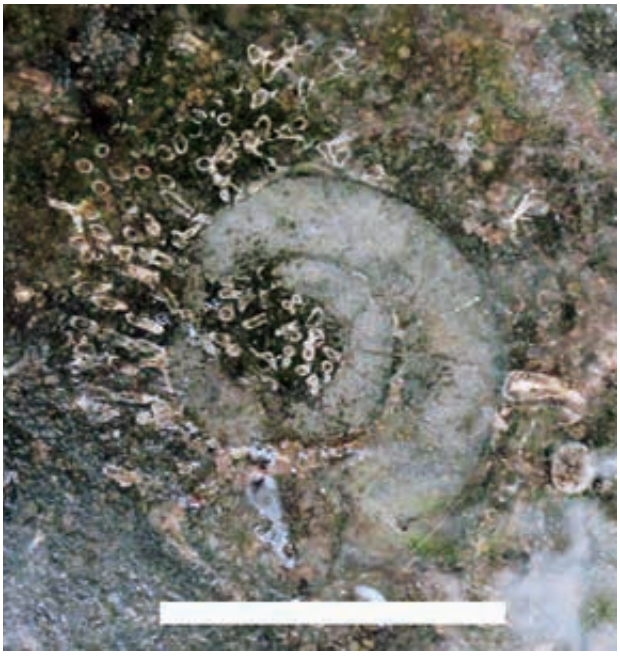


Fig. 1. A large coiled mollusc, possibly the gastropod *Straparollus* sp., in a paving slab at Rapenburg 22, Leiden, the Netherlands. Note the tabulate coral *Syringopora* sp. encrusting, particularly, the left and upper side of the mollusc, and more centrally. Specimen contrast enhanced with water. Scale bar represents 50 mm.

Discussion

The principal reason for reporting this occurrence is that evidence of biotic interactions is rarely seen in the imported Upper Palaeozoic limestones of the Netherlands. Further, molluscs are also rarities in these rocks. Although identifications should be considered preliminary, a webpage supports the association of *Straparollus* and *Syringopora*, in this instance in the Mississippian Redwall Limestone Formation of Arizona (www.schurastrophotography.com/paleo/latest/youngredwall09. html). *Syringopora* typically attached to firm/hard substrates (Adams, 1984); although locally common in limestones in the Rapenburg, no other evidence of attachment has been noted. They are most commonly an indicator of shallow-water deposition (Sando, 1980).

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